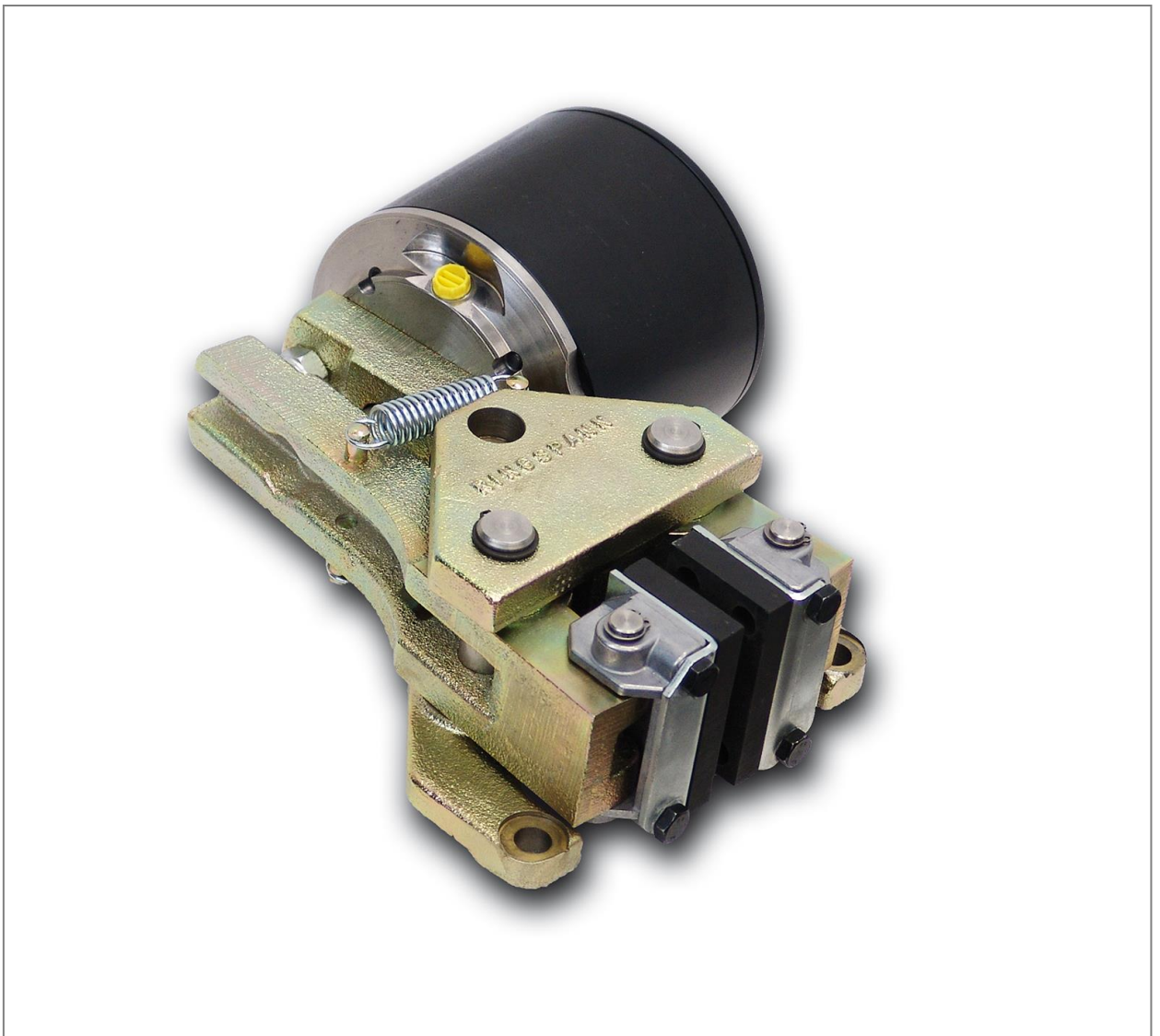


## Installation and Operating Instructions for Brake Caliper DV / DH 030 FHA

E 09.659e



Any questions? Please contact us.

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## IMPORTANT

Please read these instructions carefully before installing and operating the product. Your particular attention is drawn to the notes on safety.

These installation and operating instructions are valid on condition that the product meets the selection criteria for its proper use. Selection and design of the product is not the subject of these installation and operating instructions.

Disregarding or misinterpreting these installation and operating instructions invalidates any product liability or warranty by RINGSPANN; the same applies if the product is taken apart or changed.

These installation and operating instructions should be kept in a safe place and should accompany the product if it is passed on to others -either on its own or as part of a machine- to make it accessible to the user.

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## SAFETY NOTICE

- Installation and operation of this product should only be carried out by skilled personnel.
- Repairs may only be carried out by the manufacturer or accredited RINGSPANN agents.
- If a malfunction is indicated, the product or the machine into which it is installed, should be stopped immediately and either RINGSPANN or an accredited RINGSPANN agent should be informed.
- Switch off the power supply before commencing work on electrical components.
- Rotating machine elements must be protected by the purchaser to prevent accidental contact.
- Supplies abroad are subject to the safety laws prevailing in those countries.

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## 1. General information

These installation and operating instructions apply to

- the DV / DH 030 FHA with right-mounted brake chamber as shown in Fig.3.1 in Section 3, for mounting on a 12,5-mm- thick brake disc.
- the DV / DH 030 FHA with right-mounted brake chamber for mounting on a 25-mm- thick brake disc
- the DV / DH 030 FHA with left-mounted brake chamber
- various types of brake-pads, e.g. with wear alarm cable, increased glide speed, double friction surface or other special brake pad materials.

An identification plate with a 16-digit part number is affixed to the caliper. The precise design of the brake caliper is defined by this part number only.

Please consult the drawings in each section when using this instructions.



### **Danger to life and limb!**

**It is essential to secure the entire drive train against inadvertent starts during brake installation and maintenance. Rotating components can cause severe injuries.**

**Therefore, rotating components (e.g. brake disc) must be secured by the operator to prevent accidental contact.**

## 2. Configuration and function

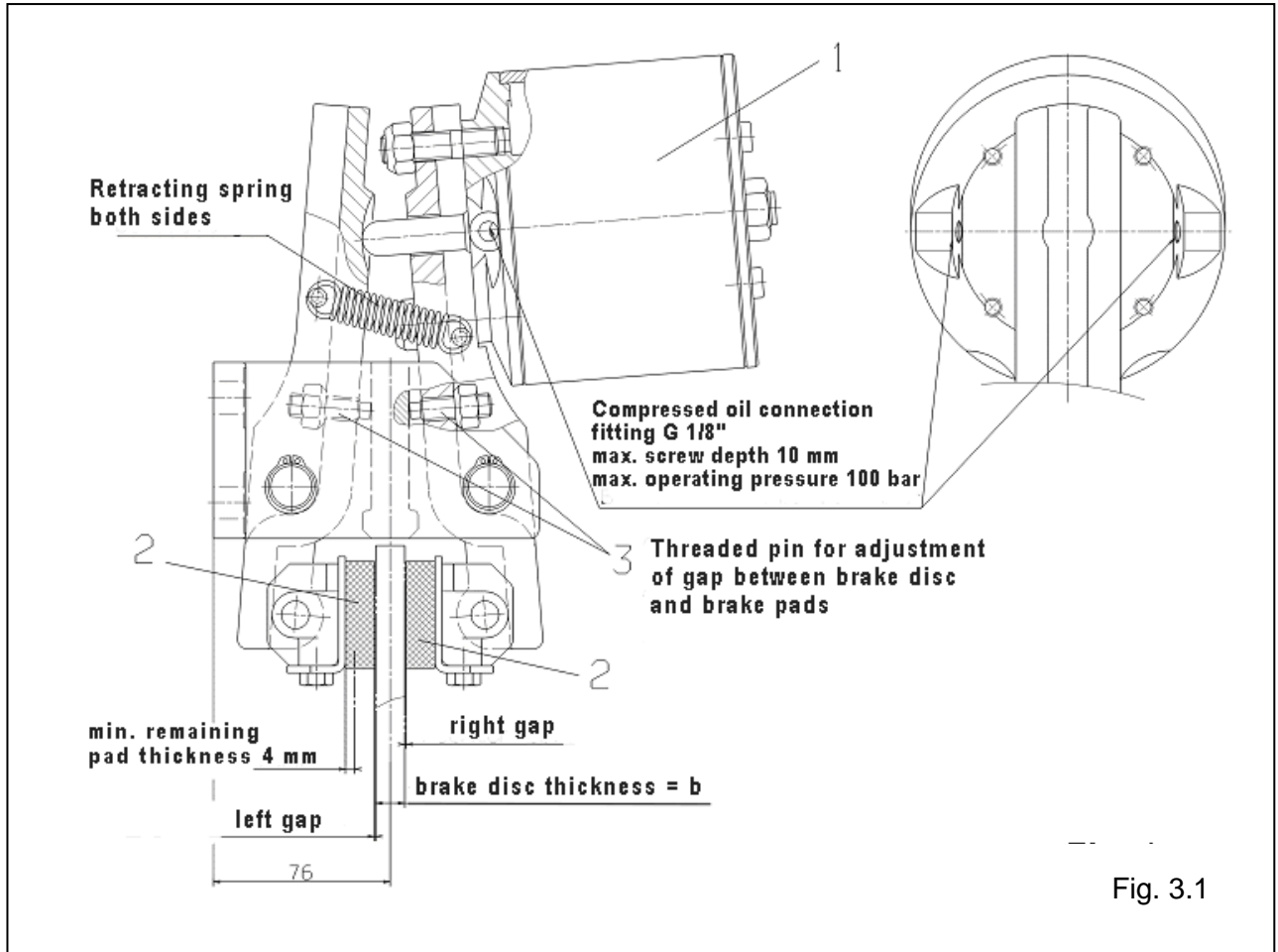
The brake caliper is used as a stopping and parking b.

Braking force is generated by springs in the brake chamber (1). It is released (opened) hydraulically with compressed oil. An automatic adjustment counters wear of brake pads (2).

Rotating parts must be secured by the user against inadvertent contact (e.g. brake disc).

The brake chamber (1) may be dismantled by the manufacturer only.

### 3. Drawing and parts list



#### Parts list:

Part	Nomenclature	Quantity	Part Number
1	<b>Brake chamber for b = 12,5-mm thick brake disc</b>	1	3514-100117-000000
	<b>Brake chamber for b = 25,0-mm thick brake disc</b>	1	3514-100139-000000
2	<b>Standard – Brake pad</b> for brake calipers: 4457-901136-000000 4457-301806-000000 4457-301802-000000	2	2472-005013-A00112*

\* Part number for 1 piece brake pad

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#### 4. Condition on delivery

Depending upon order – for 12.5 mm or 25,0 mm thick brake disc – the brake caliper is delivered with an clamping gap of approx. 9 mm or 21.5 mm between brake pads. Under oil pressure (min. 40 bar, max. 100 bar), the brake calliper opens to the pre-defined clamping pad gap of 13.5 mm and / or 26 mm (brake disc thickness plus 0,5 mm gao on each side between the brake disc and the brake pads).

#### 5. Installing the RINGSPANN brake caliper

Before installing the brake, the brake disc must be cleaned with alcohol, e.g. ethyl or isopropyl alcohol, or a water-based surfactant solution (soapy water, etc.) and then rubbed dry with a clean cloth.

When cleaning the brake disc with a thinner, acetone or a brake cleaning agent, it is important to ensure that neither these cleaners nor any cleaner residues come in contact with the brake pads. This is especially important in the case of brakes used only as parking brakes, as no dynamic braking operations take place during which thinner residues would be rubbed off the brake disc.



**Caution:**

Oil and rust-proofing-agent residues reduced friction coefficient and thus diminish transmissible braking torque substantially!

Prior to installation to a 12.5-mm or 25.0-mm-thick brake disc, the brake caliper must be released (opened). This is possible once the compressed oil supply has been connected (see Section 5.2)



**Caution:**

The unit may be pressured (without brake disc) once only, as otherwise the automatic brake pad wear adjustment feature reduces the clamping or installation gap.

##### 5.1 Installation

The brake caliper should be mounted to stabile, vibration-free machine components in order to ensure noise-free, non-screech.

During installation, it is essential to ensure that brake pads are centred and in full contact with the brake disc (the midlines of the brake arm must point to the midpoint of the brake disc.). Maximum permissible lateral brake disc wobble is 0.2 mm. Greater wobble may cause rattling and shaking of the brake unit.

The brake caliper is mounted to the machine component with using 4 M12 bolts (strength class 8.8).

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### 5.2 Hydraulic line connection

The hydraulic line connection fitting (Fig. 3.1, Section 3) to the brake chamber is a G 1/8 (Whitworth-threaded pipe, DIN EN ISO 228-1). Maximum screw-in depth is 12 mm.

Minimum required fluid pressure is 40 bar, maximum permissible pressure is 100 bar.

The hydraulic fluid line must be attached with a flexible connection in order to ensure that the movement of the brake chamber is not impaired during operation. The hydraulic line is connected to one of the two G 1/8 bores in the connection flange. The second bore serves as a bleeder outlet and must be sealed with a threaded plug.

Use only alloyed mineral oil which conforms to the specifications for Group HLP in accordance with DIN 51525 or PAI classification SC, SD or SE as a hydraulic fluid.

Maximum oil consumption per braking operations is approx. 6 cm<sup>3</sup>.

### 5.3 Setting the gap between brake disc and brake pads

The brake caliper is set by the manufacturer with a gap of 0.5 mm on each side between the brake disc and the brake pads. The gap is set with the threaded pins (3).

If the brake caliper is not aligned exactly and symmetrically with the brake disc, the gaps on either side will be different. The side-mounted brake chamber can generate tipping force, depending upon the position of the brake disc and the disc axle. In extreme cases, one brake pad is pressed against the disc, while the entire gap is left on the other side. The result is constant rubbing of the one pad against the disc during operation. The gap can be adjusted by turning the threaded pins (3) accordingly.

The gap must be reset:

- during initial installation
- when brake pad wear has been detected
- following brake pad replacement

- The brake must be released (pressurized to at least: 40 bar).
- Turn both threaded pins (3) counter-clockwise, approx. 2 full turns.
- The full of larger gap is now set at the brake calliper arm with the mounted brake chamber. Turn the matching threaded pin (3) clockwise until the gap is uniform on each side.



**Caution:**

It is important to ensure that the brake pads (2) do not rub against the brake disc when the brake is released.

- Release pressure from the brake chamber. The brake closes and full braking force (holding torque) is available.

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#### 5.4 Running-in procedure

Optimum braking effect is achieved only when both brake pads (2) are in full contact with the brake disc and the brake pads have attained a temperature of approx. 200°C. This requires multiple, brief braking while the brake disc is rotating (run-in).



**Caution:**

If breaking-in is not performed, the braking forces cited in our catalogue no. 46 cannot be achieved. Reductions of up to 50% are possible.

Note:

If it is not possible to break in the unit while the brake calliper is fully engaged (exposed to full spring pressure), braking force can be reduced by decreasing oil pressure (6...26 bar).

## 6. Maintenance

Maintenance should be performed on the brake calliper at intervals of 4 to 12 weeks, depending upon the frequency and duration of operation.

### 6.1 General maintenance

- Check both brake caliper lever arms for ease from movement.
- Clean all bearings and glide points
- Lubricate all bearing and glide points.
- Check to ensure that the brake pads do not rub against the brake disc when the brake caliper is open, i.e. that the gap is uniform on both sides. Adjust the brake gap as required (see Section 5.3).



**Caution:**

Brake pads must not come in contact with lubricants.

- Check for tight bolt / screw connections:
  - brake caliper to machine component
  - brake chamber to brake caliper lever arm
  - brake pads to brake caliper lever arms
  
- Check the following for proper seal / leaks:
  - brake chamber
  - hose connection



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## 6.2 Checking brake pad wear

Brake pad material must have a thickness of at least 4 mm (from the top surface of the brake pad to the top surface of the steel mounting plate). Brake pads or brake linings (Pos. 2) must always be replaced in pairs.

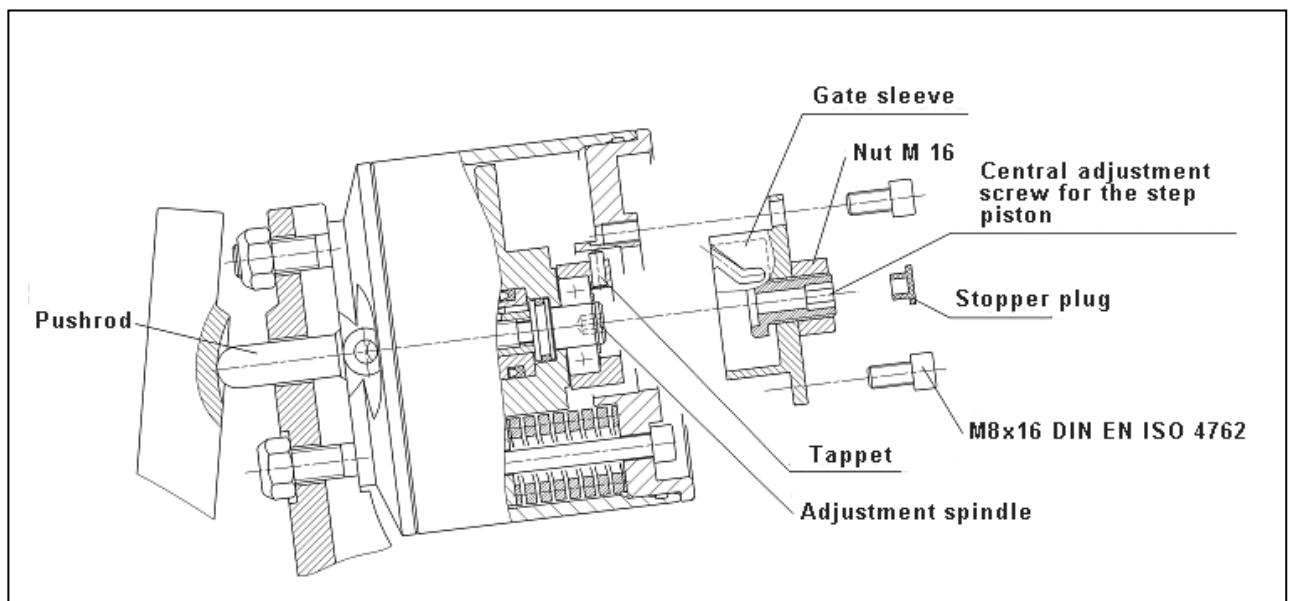
## 7. Replacing brake pads



### Caution:

Ensure that the mass held by the brake is secured against shifting or movement, as the brake must be released (opened) in order to replace the brake pads.

Required tools: Fixed spanner or ring spanner SW 13  
Socket screw wrench SW 6  
Thickness gauge or metal plate ( thickness 1.0 mm)



- The central adjustment screw for the step piston **must not be removed, tightened or loosened under any circumstances!** If the adjustment screw is removed, tightened or loosened, the function of the automatic brake adjustment feature will be altered, and the built-in inductive proximity switch can be irreparably damaged by an altered step-piston stroke!
- The brake chamber should not be pressurized, i.e. the brake is closed.
- Remove the two socket head screws (M8x16 -DIN EN ISO 4762) and the gate sleeve.
- Pressurize the brake chamber to at least 40 bar. The brake is released (opened).
- Turn the adjustment spindle clockwise (to the right) using an socket screw wrench (SW 6). This retracts the pushrod and enlarges the gap between the brake disc and the brake pads. Turn the pushrod back until it comes to a stop, but do not tighten.

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- Turn the threaded pin (3) which controls symmetrical gap adjustment back until the brake pads can be easily replaced.
- Replace the worn brake pads including carrier plates. To do so, a ring spanner or fixed spanner SW 13 is needed.
- Remove pressure from the brake. The brake closes.
- Replace the gate sleeve, ensuring that the tappet fits into the sleeve groove. The groove chamfered to facilitate this operation. Turn the sleeve to the right until screw holes are exactly aligned. Insert and tighten the screws.
- Reapply pressure to the brake chamber, min. 40 bar, max.100 bar.
- Remove the central stopper. Then set the gap between the brake pads and the brake disc to 0.5 on each side. This is most effectively accomplished by pressing one pad against the disc and setting the full gap of 1.0 mm on the opposite side, using a feeler gauge. This is done by turning the adjustment spindle counter-clockwise (to the left) with an socket screw wrench (SW 6) until the feeler gauge is lightly clamped.



**Caution:**

The adjustment spindle cannot be turned clockwise when the coulisse sleeve is mounted. Any attempt to do so by applying force may cause damage to the automatic wear adjustment system.

- Remove the thickness gauge and replace the stopper.
  - Adjust the gap between the brake pads and the brake disc as described in Section 5.3.
- The brake is now ready for operation